Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of	)	
	)	
Price Cap Performance Review for Local Exchange Carriers	)	CC Docket No. 94-1
	)	

REPLY COMMENTS OF BELLSOUTH

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BellSouth Corporation and BellSouth Telecommunications, Inc. ("BellSouth"), hereby submit the following Reply Comments, in accordance with the Commission's Order on Motion for Extension of Time, DA 96-138 (released February 6, 1996).

BellSouth also has participated actively in the preparation of the Reply Comments being submitted today by the United States Telephone Association ("USTA"). BellSouth fully supports the positions advanced in the USTA filing and in the studies submitted by USTA's supporting consultants. BellSouth thus will not duplicate the USTA arguments, but below supplements them as appropriate.

I. INTRODUCTION AND SUMMARY

The Commission has been exploring price regulation of the carriers subject to its jurisdiction for almost a decade. Following extensive proceedings, the Commission adopted price regulation for AT&T in 1989 and for the local exchange carriers ("LECs") in 1990.[1] From the outset, the Commission has recognized that breaking the direct link between prices and earnings provides carriers with an incentive to improve earnings by improving their efficiency and increasing their productivity. By rewarding improved productivity with improved earnings, price regulation emulates the incentive structure of

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1. The Commission also implemented a price cap plan for cable providers in 1992.

competitive markets. Thus, price regulation is acknowledged to be superior to traditional rate of return regulation in facilitating the transition of the telecommunications industry from a regulated monopoly environment to a fully competitive environment in which regulation is superfluous.

Last October, the Commission purported to complete the transition of AT&T to a competitive environment, declaring AT&T to be non-dominant and removing its remaining domestic services from price regulation.[2] In this proceeding and in the companion Pricing Flexibility proceeding, the Commission is seeking to promulgate rules that will allow the LECs to complete their own transition to competition.

In its initial Comments, BellSouth urged the Commission to remember that the Commission's LEC price caps is not and should not be viewed as a "long term" system of regulation; it is instead an interim step along the path to deregulation.[3] Since BellSouth's comments were filed, Congress has enacted the Telecommunications Act of 1996, the first sweeping overhaul of the Commission's jurisdictional statute in six decades. The new legislation mandates competition as Congress's public policy choice, and requires the Commission to eliminate unnecessary regulation as soon as the public interest permits. The new legislation clears the way for full competition to flourish in both local and interstate telephony markets much more rapidly than would have been possible without congressional intervention.

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2. See In the Matter of Motion of AT&T to be Reclassified as a Non-Dominant Carrier, FCC 95-427, Order (released Oct. 23, 1995) ("AT&T Non-Dominance Order").

3. As BellSouth noted, given the momentum and magnitude of competitive change, it is unlikely that another five years will be required to reach a sufficient level of competition that warrants the elimination of LEC price cap regulation.

In view of the tremendous change created by the new legislation, and the large number of proceedings required by Congress to implement it, BellSouth strongly urges the Commission to consider deferring action on this proceeding for a year. Having suffered delay due to circumstances beyond the Commission's or any party's control -- including government shutdown and weather emergencies -- and now faced with implementing the mandate of sweeping legislative change, the Commission's prospects for completion of this proceeding before the 1996 annual access tariff filing are low. Certain parties to this proceeding have suggested that if this deadline could not be met, then the Commission should consider deferring action in this proceeding for a year and keeping the present interim price cap plan in place. BellSouth believes this proposal makes sense. While the interim plan is far from perfect, it is an acceptable placeholder given the unprecedented number of time-sensitive, fundamentally important rulemakings with which the Commission must now deal.

In any event, however, the implications of the legislation for this proceeding are clear should the Commission decide to move forward with revision of the interim plan. The Commission should seek a pragmatic regulatory model that will promote the development of a fully competitive telecommunications marketplace. The Commission foreshadowed this notion in setting forth three criteria for the LEC price cap plan in the Fourth Further Notice, i.e., that it should be economically meaningful, should flow through the benefits of reductions in LEC unit costs to consumers, and should be administratively simple and rely on publicly available data.[4/] USTA has already set forth a price cap plan that meets all three of the Commission's criteria. Indeed, the USTA-proposed Christensen

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4. Fourth Further Notice at ¶ 16.

Simplified TFP Method was designed by the nation's leading expert on productivity analysis specifically to meet these criteria.

By contrast, AT&T and Ad Hoc in particular are shameless in their efforts to keep the LECs bound by anachronistic regulatory constraints that affirmatively contravene the fundamental theory of price regulation and the policy goals of the Commission in this proceeding. Purporting to offer corrected alternatives to the Christensen Simplified TFP approach, AT&T and Ad Hoc offer price cap options that have absolutely no basis in sound analysis or public policy. A price cap LEC seeking to achieve the productivity targets AT&T and Ad Hoc advance would have to improve its productivity each year by almost three times the level imposed by the Commission in the AT&T price cap plan, and by nearly thirty times the level of productivity gain achieved by the competitive U.S. economy as a whole (0.3%). Furthermore, the burden of this target would be cumulative on price cap LECs year after year.

Plainly, such results are absurd. AT&T and Ad Hoc do not attempt to place their recommendations in context, nor do they offer any suggestion that their proposed productivity factors are achievable targets. This is because they cannot. The Christensen Simplified TFP Method proposed by USTA provides the only credible evidence in the record of a realistic, self-adjusting productivity target that is appropriate for the LECs during the remaining transition to full competition. It should be adopted by the Commission, and AT&T and Ad Hoc's alternatives rejected.

II. DISCUSSION

A. The Commission Should Consider Deferring Further Action in This Proceeding

In the Fourth Further Notice, the Commission raised as an issue the prospect of adopting "as our long-term plan the scheme adopted in the First Report and Order as the interim plan."[5] NYNEX and US West have recommended that if the Commission is unable to complete this rulemaking in time to be implemented with the 1996 annual access tariff filing, then the Commission should extend the interim plan for another year.[6]

BellSouth believes that, in view of the circumstances now confronting the Commission, this proposal makes sense. Because the issues in this proceeding are extremely complex, and because of circumstances largely beyond either the Commission's or any party's control, including weather emergencies and government furloughs, it is unlikely that the Commission will complete this proceeding in time to implement its results in the 1996 access tariff filing. More important, the passage of the Telecommunications Act of 1996 will create a "sea change" in the LEC industry that will be relevant to the Commission's predictive judgments with respect to the LECs' ability to improve productivity in the future.

As a practical matter, the new legislation requires the Commission to conduct an unprecedented number of rulemakings during the next year. BellSouth therefore recommends that the Commission defer further work on this proceeding while it conducts the rulemakings required by the new legislation. While the issues in this proceeding are

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5. Id. at ¶ 92.

6. See NYNEX Comments at 25; US West Comments at 9-10.

important, the conclusion of this proceeding is not subject to a statutory deadline. The interim plan, while far from perfect, should be adequate for another year.[7]

BellSouth also notes, however, that while deferral would be appropriate in this proceeding, deferral in the companion Pricing Flexibility docket would not. The dramatic increase in competitive activity that the new legislation will unleash will result in maximum consumer benefit only if the LECs are permitted to price their services with the same degree of flexibility granted to their competitors. The Pricing Flexibility proceeding is fundamental to establishing the ground rules under which the new competitive paradigm will unfold.

B. The Commission Should Reject the Absurd Productivity "Adjustments" Proposed By Ad Hoc and AT&T

Should the Commission decide to move forward, as it assesses the Christensen TFP approach and the critiques of that approach, the Commission should keep in mind the proper role of the "X-Factor," or "productivity offset," in a price regulation plan. The productivity offset is not a penalty factor and it is not a rate of return surrogate. Rather, it is the amount, if any, by which the Commission realistically anticipates that the LECs can exceed the productivity gains achieved by the economy as a whole each year. The Commission set the productivity offset in the AT&T price cap plan at three percent by looking at the long term trend in total factor productivity ("TFP") of the Bell System compared with that of the economy as a whole (a 2.5 percent average annual differential), and added a 0.5 percent annual "Consumer Productivity Dividend" ("CPD"). During the six years that AT&T was subject to price cap regulation for at least some of its services, the

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7. Deferral of this proceeding will also allow the U.S. Court of Appeals for the D.C. Circuit to complete its review of the First Report and Order, which has been briefed and argued. See Bell Atlantic Telephone Co. v. FCC, No. 95-1217 (and consolidated cases). The Commission could then consider the outcome of the Court of Appeals decision in its Order in this proceeding.

Commission never changed the productivity offset, despite rising earnings by AT&T and the other IXCs. Thus, at the end of the AT&T price cap plan, consumers of AT&T's basic services were paying rates three percent (0.5% x 6 years)[8] lower than they would have had AT&T continued with the historical productivity performance that it had achieved under rate of return regulation.

Despite evidence that the scale and scope economies were concentrated in the interexchange portion of the Bell System network, the LECs were initially assigned a 3.3 percent productivity offset, which also included a 0.5 percent CPD, with an option to elect a higher 4.3 percent productivity offset to avoid some of the disincentives and negative competitive impact of the "sharing" requirement that was imposed on the LECs (but not on AT&T). In the First Report and Order in this proceeding, the Commission raised the productivity offset for the LECs to 4.0 percent with sharing, and 5.3 percent without sharing, both of which options included a 0.5 percent annual CPD. The Commission also required the LECs to adjust their Price Cap Indices as if the new 4.0 percent productivity offset had been adopted at the beginning of the LEC price cap plan. Thus, with the next LEC annual access tariff filing, the cumulative impact of the LEC price cap plan will also be a price cap index that is nine percent per year lower than the historical productivity differential (1.5% x 6 years).[9]

In spite of the fact that the existing LEC price cap plan is producing substantial consumer benefits (three times the benefit in percentage terms than that realized

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8. The difference between AT&T's X-Factor of 3% minus the 2.5% productivity differential, or 0.5%, X 6 years equals 3 %.

9. The difference between the LECs' X-Factor of 4% (as adjusted) minus the 2.5% productivity differential, or 1.5%, X 6 years equals 9%.

under the former AT&T price cap plan), AT&T and Ad Hoc both have proposed radical, draconian increases to the LEC productivity offset. In the first phase of this proceeding culminating in the First Report and Order, AT&T relied upon its so-called "Direct Method" to recommend a 5.54 percent productivity offset for the LECs. The Commission properly rejected AT&T's proposed X-Factor, among other things because it was fundamentally based upon a rate of return model.[10] Now AT&T has developed what it calls the "Performance Based Model" to recommend an even more extreme LEC productivity offset -- 7.8 percent with sharing, and 8.8 percent without sharing.[11] Not to be outdone, Ad Hoc recommends an even higher productivity offset of 9.9 percent, also with sharing.[12]

So much for the "incentive" in incentive regulation! Neither AT&T nor Ad Hoc has discussed the impact of their proposals on the LECs, but their productivity recommendations are so far removed from reality as to be self-rebutting. Moreover, the multiple flaws that permeate the "studies" underlying the AT&T and Ad Hoc recommendations are summarized in USTA's Reply Comments, as well as by BellSouth below. The studies submitted by Ad Hoc and AT&T fail the three criteria stated by the Commission as essential to the development of a productivity target: their results are not

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10. See First Report and Order, 10 FCC Rcd at 9034, ¶ 163 (noting as disadvantage the fact that under Direct Model, "the departure of actual rate of return from a target rate of return is a critical factor in measuring productivity").

11. Comments of AT&T at 31-32. Under its proposed "Direct Model" AT&T had calculated that using an X-Factor of 5.54%, the accounting rates of return of the price cap LECs would have been limited, in aggregate, to a flat 11.25 percent rate of return, which would have resulted in all of the benefits of LEC productivity improvements being recaptured in the form of price reductions to the IXCs. Under its "Performance Based Model," AT&T no longer states a target for LEC earnings, but it is obviously far below that authorized for carriers that remained under rate of return regulation.

12. See Comments of the Ad Hoc at 4, and Attachment, "Establishing the X-Factor for the FCC Long-Term LEC Price Cap Plan."

economically meaningful, they do not help to ensure that ongoing reductions in unit costs by the LECs are passed through to consumers, and they are not administratively simple.[13] Because these flawed studies are the only evidence submitted in an attempt to rebut the Christensen Simplified TFP Method, and because they are entitled to no credibility at all, the Commission should adopt USTA's recommendation.

1. The ETI and Norsworthy Critiques of the Christensen TFP Approach Are Fundamentally Flawed.

BellSouth retained Dr. Frank M. Gollop, Professor of Economics at Boston College, to review and analyze the study submitted by Dr. John R. Norsworthy on behalf of AT&T, and the study submitted by Economics and Technology, Inc. ("ETI") on behalf of Ad Hoc. These studies purportedly justify the X-Factors that AT&T and Ad Hoc propose. Dr. Gollop's reply statement is attached as Attachment 1.[14] In reviewing the ETI and Norsworthy studies, Dr. Gollop presents economic analyses of the major topic areas raised directly by them, and among other matters, addresses the numerous technical deficiencies in the Norsworthy and ETI critiques of the Christensen TFP methodology. Dr. Gollop shows, for example, that:

(1) Norsworthy and ETI both use flawed price adjustments that lead to higher but inappropriately measured input price differentials, and that yield the "patently false" policy conclusion that the X-Factor will be downwardly biased if the AT&T and ETI-proposed adjustments are not made to LEC input prices;

(2) Norsworthy's statistical critique of USTA's position that the input price differential should be zero "neither addresses the right question nor refutes the Christensen results";

13. Fourth Further Notice at ¶ 16.

14. Dr. Gollop filed a statement on behalf of BellSouth attached to BellSouth's January 16, 1996 initial comments in this proceeding. His curriculum vitae is attached to that statement.

(3) The Norsworthy and ETI assumptions with respect to interstate and non-interstate inputs are unsupported and contradictory;

(4) Norsworthy's measure of the cost of capital, among other things, "violates economic theory, ignores economic reality, is based upon a rate-of-return paradigm," and "is wholly inconsistent with the incentive mechanism of a price-cap regime";

(5) Norsworthy's recommendation of using revenue requirements as output weights rather than revenue as adopted by Christensen not only requires adopting indefensible cost allocation rules, but is also utterly unnecessary according to the terms of Norsworthy's own proposed model;

(6) There is no reason to substitute the Fisher Ideal index for the USTA/Tornqvist index as Norsworthy proposes.[15]

In fact, Dr. Gollop shows that AT&T's proposed Performance Based Model is not a TFP study at all, but yet another attempt by AT&T to resuscitate rate of return methodology under a different label. By creating a "feedback loop" that treats all economic profits as an input cost, and joined with recommendations such as annual LEC price cap adjustments and retention of sharing, AT&T's "true objective is transparent: return the LECs to rate-of-return regulation."[16] In similar fashion, Ad Hoc's arguments are similarly rate-of-return based, premised entirely on the alleged public interest benefits of "limit[ing] appropriately the LECs' earnings."[17]

The marketplace and the Commission have already rejected the rate-of-return paradigm.[18] The proposals of AT&T and Ad Hoc are irreconcilable with price regulation

15. Gollop Reply Statement at 2-4, 6-35.

16. Id. at 43-44.

17. See Comments of Ad Hoc at 3.

18. Gollop Reply Statement at 44.

and would eliminate all profit incentives from the LEC price cap plan. They thus should be summarily discarded by the Commission.

2. The Commission Should Adopt the USTA/Christensen TFP Approach.

USTA's reply comments present a point-by-point rebuttal of each of the criticisms offered by Ad Hoc, AT&T and others with respect to Christensen's methods for aggregating categories of output and measuring input (including the cost of capital), as well as Christensen's determination that no meaningful input price differential or interstate-only measure of TFP can be developed. USTA correctly also urges the Commission not to focus solely on the goal of lowering LEC access rates to the exclusion of the broader goals of incentive regulation.[19]

BellSouth fully supports USTA's positions. In addition, Dr. Gollop has provided additional support for the theoretical soundness of numerous aspects of the Christensen TFP approach, observing that:

* A moving average supporting a single industry X-Factor has none of the efficiency-reducing problems claimed by AT&T.

* A moving average guarantees that superior performance will be shared by ratepayers, thereby making unnecessary the continued application of a CPD.

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19. Contrary to the views of Ad Hoc, AT&T and MCI, the Commission should not focus unduly on manipulating the blunt instrument of the price cap plan as a direct means of lowering interstate access charges. In fact, BellSouth cautioned the Commission in its initial comments not to place undue emphasis on its "flow through" criterion, since its declaration of AT&T's "non-dominance" effectively has relinquished the Commission's ability to police or require a flow through of reductions in LEC unit costs to consumers. See Comments of BellSouth at 8. Indeed, this point is highlighted by AT&T's announcement last month of yet another hike in residential long distance rates -- a 4.3 percent increase. See, e.g., The Wall St. J., Feb. 23, 1996, at C4 (Notice, "Attention to All AT&T Customers"). This increase was imposed despite the fact that the LECs reduced interstate access charges to the interexchange carriers by more than 1.2 billion dollars last August. See 1995 Annual Access Tariff Filing, Tariff Review Plan, Form SUM-1.

* A moving average calculated on an industry-wide basis has none of the productivity disincentive problems associated with and completely displaces any theoretical need for a sharing mechanism, which is otherwise tantamount to taxing productivity gains.

* A single industry-wide X-Factor, modified annually through a moving average process, is the only price cap paradigm that induces each LEC to maximize its productivity growth, eliminates any incentive for any LEC to engage in strategic behavior, eliminates the need for sharing or a CPD, and prepares the LECs for true competition.

In structuring the price cap plan to promote the final push to a competitive marketplace, the Commission should not paradoxically eliminate the incentives from incentive regulation. The USTA TFP approach achieves all of the Commission's price cap goals, and should be adopted by the Commission.

C. AT&T's Attack on LEC Service Quality is Frivolous

Another frivolous criticism proffered by AT&T and Norsworthy is the assertion that the Christensen TFP model does not take into account service quality.[20] Relying on pre-price cap data, Norsworthy speculates that under price cap regulation, LECs have an incentive to trade off service quality to generate additional profits. Based on this speculation, Norsworthy proposes that the Commission look for ways to tie service quality measures to productivity measures.

This AT&T/Norsworthy attack is utterly frivolous, and ignores the specific findings made by the Commission in the First Report and Order that price cap regulation has not resulted in a decline in LEC service quality. In fact, the Commission's finding could not be more unequivocal:

20. Comments of AT&T, Appendix A at 63-66; 84-85 (Norsworthy statement).

> There is nothing in the record to indicate that there has been any significant degradation of service quality since the institution of price cap regulation the LECs.[21]

This Commission finding in the First Report and Order is further supported by the analysis of Dr. Gollop, who finds that there "is neither a basis in economic theory nor a foundation in empirical reality for Norsworthy's claim that the LECs have sacrificed service quality to enhance either efficiency or profitability."[22] Dr. Gollop notes that the actual and potential competition generated by the new telecommunications legislation make it absolutely irrational for LECs to decrease their service quality. Moreover, Norsworthy's conclusions that LECs may have an incentive to reduce service quality are contradicted by Norsworthy's own research, which finds service quality in every one of the ten dimensions handpicked by Norsworthy to have increased over the very period Norsworthy has analyzed. This fact, combined with statistical flaws in Norsworthy's analysis, leads Dr. Gollop to conclude that the Commission should place "no weight" on Norsworthy's purported findings.[23]

The Commission should reject AT&T's attempt to inject LEC service quality as a "red herring" issue in this proceeding. AT&T has shown no factual or public policy predicate for re-examining the Commission's determination in the First Report and Order.

III. CONCLUSION

The Commission should adopt a price cap plan that calculates productivity as a LEC industry moving average of TFP that simulates competition, is simple to administer and is economically meaningful. The Commission should reject regressive rate-of-return-oriented

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21. First Report and Order, 10 FCC Rcd at 9121, ¶ 365.

22. Gollop Reply Statement at 32.

23. Id. at 35.

proposals and instead should seek to transition price cap LECs to a fully competitive environment that obviates the need for regulation altogether. Adopting the Simplified Christensen TFP approach will accomplish this result.

Respectfully submitted,

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An Economic Analysis of the AT&T and Ad Hoc Comments

Statement in Support of BellSouth Reply Comments

Prepared by

Professor Frank M. Gollop

Boston College

March 1, 1996

1. Introduction and Summary

This document has been prepared after careful review of the January 1996 comments submitted by AT&T and the Ad Hoc Telecommunications Users Committee (Ad Hoc) to the Federal Communications Commission under CC Docket No. 94-1. This reply comment primarily addresses the economic analyses developed by Dr. John R. Norsworthy and Economics and Technology, Inc. (ETI) in their statements written on behalf of AT&T and Ad Hoc, respectively.

The body of this paper presents in the order indicated below an economic analysis of major topic areas raised directly by Norsworthy and/or ETI:

Issue 1i:	Hedonic Price Adjustments and the Input Price Differential; Applying Statistical Tests to an Input Price Differential
Issue 1j:	Interstate Services v. Company-Level Analysis
Issue 1b:	Measuring the Cost of Capital
Issue 1a:	Proper Weights for Output; Fisher Ideal v. Tornquist Indexes; Service Quality
Issue 3a:	The Moving-Average Process
Issue 2c:	The Consumer Productivity Dividend
Issue 5a:	Sharing
Issue 4:	Superiority of a Single Industry 'X'

This report is divided in two major parts. The first addresses technical issues affecting the measurement of TFP growth, the input price differential, and the resulting 'X' factor. The second concerns itself with policy issues associated with the proper application of an 'X' factor under incentive regulation. A summary of the major conclusions is as follows:

Methodological and Technical Issues:

Issue 1i: Hedonic Adjustments. The analysis of input price differentials, by definition, requires symmetry in the treatment of U.S. and LEC input prices. AT&T and ETI apply hedonic quality adjustments only to LEC input prices. The U.S. input price growth rates against which their respective input price differentials are calculated do not (as ETI concedes in its statement) include such quality adjustments. The AT&T and ETI hedonic adjustments therefore tautologically lead to higher but inappropriately measured input price differentials.

Using Norsworthy's own data, an input price differential computed on symmetrically defined LEC and U.S. data produces a differential equal to 1.50%, not the 2.54% he reports and well below the 2.2% differential produced by Bush-Uretsky.

Not only are the AT&T and ETI applications of hedonics flawed, but ETI's policy conclusion is patently false. ETI incorrectly concludes that if one fails to incorporate hedonic quality adjustments in LEC input prices, the resulting 'X' factor will be downward biased. This is simply untrue. As both Norsworthy and ETI acknowledge, hedonic adjustments to price must be offset by identical but opposite adjustments to input quantities. Consequently, productivity growth contracts by the same amount by which the input differential grows, leaving 'X' unaffected. ETI's conclusion is simply untrue *a priori* .

Issue 1i: Applying Statistical Tests. The appropriate question before the Commission is whether or not U.S. and LEC prices have exhibited (and are expected to exhibit) significantly different growth rates--not, as Norsworthy asserts, whether or not U.S. and LEC input prices have been identical at each point in time. The appropriate test (and the one Christensen conducts) concerns input price growth rates, not price levels. Norsworthy's chi-squared test result that U.S. and LEC input prices have not been identical neither addresses the right question nor refutes the Christensen results.

Issue 1j: Interstate v. Company-Level Analysis. Production under conditions of common costs prevents any economically meaningful allocation of costs to interstate and intrastate subsets. It is important to note that the problem is not that economic theory offers no guidance in how to allocate common costs. Economic theory is clear. Allocating costs to distinct outputs contradicts the very process of joint production that is observed in the industry. In short, one cannot examine the cost (productivity) conditions of each output in isolation because the multiple outputs are not produced in isolation.

ETI provides no economic basis for its assumption that interstate and intrastate inputs grow at equal rates. ETI wholly bases its assumption on accounting conventions adopted in Part 36 rules though it acknowledges that the Part 36 rules bear "little direct relationship to the manner in which costs are actually incurred." ETI therefore effectively defines interstate and intrastate TFP growth differences wholly on measured output differences. Its "finding" that the 'X' factor should be increased by a full 2.8 percentage points has no economic basis.

Norsworthy adopts the same assumption but labels it "conservative." In fact, the economic assumptions Norsworthy adopts in his interstate analysis not only are mutually contradictory but also are contradicted by his own data. Correctly applying Norsworthy's assumptions to his data indicates that, under Norsworthy's analysis, interstate inputs would be expected to grow faster than intrastate inputs.

Issue 1b: Cost of Capital. Economic theory makes clear that the rate of return variable in the cost-of-capital formula should reflect external opportunity costs to the firm. Norsworthy, in contrast, posits that the rate of return should be measured by each LEC's internal or realized rate of return. This violates economic theory, ignores economic reality, is based on a rate-of-return paradigm, is wholly inconsistent with the incentive mechanism of a price-cap regime, and, by assuming that each LEC is earning exactly its true opportunity cost of capital, eliminates the need for regulation.

Issue 1a: Output Weights. Norsworthy recommends using revenue requirements as output weights rather than revenue as adopted by Christensen. This not only requires adopting indefensible cost allocation rules but also, in the context of Norsworthy's model, is not even necessary. Norsworthy's model assumes perfect competition-- zero profits (profits are treated as costs) and constant returns to scale (fully allocated costs are assumed to equal marginal costs). As such, Norsworthy's model can be used to justify any set of output weights, whether based on revenue, fully-allocated cost, or marginal cost.

Issue 1a: Fisher v. Tornquist Indexes. Fisher and Tornquist indexes applied to LEC data yield identical series of output, input, and TFP growth rates. Moreover, the Bureau of Labor Statistics currently uses a Tornquist-based formula to calculate TFP growth for the U.S. economy and its major sectors. For the Commission's comparative purposes, it seems well advised to adopt a TFP specification that not only is soundly based in economic theory but also is the basis for government-produced TFP growth measures for the aggregate economy, the base against which any LEC TFP differential is to be calculated.

Issue 1a: Service Quality. Actual and potential competition unleashed by the Telecommunications Act of 1996 makes it absolutely irrational (i.e. unprofitable) for LECs to decrease their service quality. Moreover, Norsworthy's conclusion that LECs have an incentive to reduce service quality is contradicted by his own data which finds that <u>every one</u> of the 10 dimensions of service quality Norsworthy hand-picks for analysis has increased over the very period he analyzed. This together with specification biases embedded in his regression models (e.g., Norsworthy ignores improvements in switching and transmission equipment) makes it imperative that <u>no weight</u> be placed on Norsworthy's "findings."

Policy Issues:

Issue 3a: The Moving-Average Process. A moving average supporting a single industry 'X' has none of the efficiency reducing problems claimed by AT&T. In fact, AT&T's announced concerns arise not under a moving-average paradigm but only under either of the two following scenarios: (a) a price-cap plan in which each LEC's 'X' factor is instantaneously adjusted each year or (b) LEC TFP growth increases indefinitely. Neither is a condition nor a result of a moving-average process.

Issue 2c: The Consumer Productivity Dividend. A moving-average process guarantees that superior performance by the LECs will be shared with ratepayers, thereby making unnecessary the continued application of a consumer productivity dividend. One virtue of the moving-average regime is that it eliminates the need to peg a particular CPD number and makes the CPD redundant by automatically passing through to ratepayers any efficiency gains resulting from the LECs' true TFP performance.

Issue 5a: Sharing. One of the most important features of a moving average calculated on an industry-wide basis is that it has none of the productivity disincentive problems associated with sharing. Under a moving average, each LEC has the unambiguous incentive to maximize its productivity growth. Under sharing, the incentive to increase productivity is reduced because added productivity growth will increase earnings which in whole or in part will be taxed away. Taxing earnings through sharing is equivalent to taxing productivity gains. The incentive problem is obvious.

Issue 4: Single Industry 'X'. A single industry-wide 'X' factor modified annually through a moving-average process is the only price-cap paradigm that induces each LEC to maximize its productivity growth, eliminates any potential incentive for any LEC to engage in strategic behavior, eliminates the need for sharing and the consumer productivity dividend, and best prepares the LECs for life in a competitive Darwinian environment.

The AT&T Proposal: Returning to Rate-of-Return. The AT&T model is a poorly veiled attempt to resuscitate rate-of-return regulation. Consider the following features of the AT&T proposal:

1. The Performance-Based Model requires that all profits be assigned to the cost of capital and thereby necessarily maintains that revenues equal costs, the initial condition and the guiding principle for the derivation of the rate-of-return formula.

2. Norsworthy characterizes regulatory mandates as one basis for his TFP model's requirement that total revenues exactly equal total costs: "Why should total revenues exactly equal the total costs assigned to the inputs?...in practice, the regulatory authorities mandate it."[1] This "regulatory mandate" holds only for rate-of-return regulation. It is inconsistent with price-cap regulation.

3. AT&T recommends that sharing be retained. Sharing is the umbilical cord of rate-of-return regulation.

4. AT&T's plea that "the Commission should conduct annual performance reviews...and a major LEC performance review every three years"[2] is nothing more than an attempt to preserve rate-of-return review.

5. Norsworthy proposes revenue requirements as weights for forming a measure of LEC output. To operationalize Norsworthy's proposal, arbitrary cost-allocation rules intertwined with rate-of-return regulation would have to be maintained.

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[1] Statement of John R. Norsworthy, Appendix A to AT&T filing, p. 37.

[2] Comment of AT&T, p. v.

6. The only possible way to avoid AT&T's concern that "moving averages are likely to be consistently inaccurate for the year in which the average actually forms the basis for the 'X' factor"[3] is to have annual hearings to repeg each LEC's 'X' factor to its actual TFP performance in that year. This mimics perfectly the rate-of return process and could not be more at odds with any form of incentive regulation.

The true objective of the AT&T proposal is transparent: return the LECs to rate-of-return regulation. History, the marketplace, and the Commission have already rejected this paradigm.

2. Methodological and Technical Issues

A. Issue 1i: Hedonic Price Adjustments and the Input Price Differential

Both Norsworthy and ETI argue that an hedonic-based adjustment for the improving quality of capital input would necessarily reduce the rate of growth in the LEC input price for capital thereby increasing the overall input price differential. Norsworthy states:

> In our analysis, the capital input price was adjusted for quality changes based on its technological characteristics. This hedonic adjustment was extended to the 1991-1994 period, and results in an average annual downward adjustment (in the average annual growth of capital input price for the LECs) of 3.27 percent.[4]

After this downward adjustment, Norsworthy combines his quality-adjusted LEC price of capital with LEC labor and material input prices and concludes:

> The average rate of growth for input prices in the non-farm business sector is 3.00 percent per year for 1985-1994. The average rate of growth for input prices at the LECs is 0.46 percent per year for 1985-1994. Thus, the best point estimate of the input price differential for 1985-1994 is 2.54 percent per year.[5]

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[3] Comment of AT&T, p. 33.

[4] Statement of John R. Norsworthy, Appendix A to AT&T filing, p. 20.

[5] Ibid, p. 21.

ETI similarly extols the virtues of hedonic price adjustments throughout its statement. Like Norsworthy, ETI concludes that failure to apply hedonic adjustments upward biases the measured rate of growth in LEC input prices and therefore biases downward any input price differential between LEC and U.S. input price growth.

> There are several implications of this discussion of quality effects for the results of the USTA/Christensen TFP study and its application to the 'X' factor...The more predominant effect under the USTA/Christensen approach, is that by overstating the growth in input prices, the differential between LEC input price level growth and economy-wide input price growth is understated.[6]

The problem with Norsworthy's and ETI's particular applications of input price adjustments is neither that hedonic price adjustments are theoretically flawed nor that carefully crafted econometric models are incapable of generating such estimated adjustments. The principal problem is that the economy-wide benchmark input price growth rates against which their input price differentials are calculated largely do not include such quality adjustments. Consequently, Norsworthy's and ETI's "hedonic adjustments" tautologically lead to higher but inappropriately measured input price differentials.

It is true that the Bureau of Economic Analysis and the Bureau of Labor Statistics have in very recent years begun to incorporate hedonic quality changes in a few of the price series underlying the national accounts but, for the most part, U.S. price series currently do not reflect underlying quality changes. The current situation is largely as ETI itself describes at pages 37-38 of its attachment to the Ad Hoc filing:

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6 Statement of ETI appended to Ad Hoc Comment, p. 42. Other references in the ETI statement to the same conclusion appear at pages 3, 27, 28, 36, 37, 44, and 57.

> Indeed, a recent report (September 15, 1995) by the Advisory Commission to Study the CPI suggested that when adding all the estimates of each source of CPI bias, the CPI overstated the actual rate of inflation by about 1.5% per year, with the quality change bias alone estimated at 0.2 or 0.6 of the total source of bias....Most economists agree that the CPI has been inflated due to methodological problems, particularly related to the failure of the CPI to incorporate hedonic adjustments. The CPI bias is also manifest in other indexes, such as the GDP-PI, that incorporate the CPI.[7]

The calculation of an input price differential, by definition, requires symmetry in its treatment of U.S. and LEC input prices. ETI's own text points to the bias in its and Norsworthy's analyses of an input price differential based on a comparison of quality-adjusted LEC input price growth rates against government-based economy wide price data. After all, if the U.S. price series were similarly adjusted for the improving quality of capital input, U.S. input prices presumably would increase more slowly than currently reported by BLS and BEA and thereby would reduce the input price differentials calculated by Norsworthy and ETI.

The data underlying Norsworthy's analysis are presented in a machine-readable diskette making it possible to quantify the extent of the bias in Norsworthy's study resulting from his asymmetric treatment of LEC and U.S. input price series. Norsworthy reports that quality-adjusted LEC capital input price growth over the 1985-94 period is a -4.77% per year.[8] As cited above, Norsworthy finds that his hedonic adjustment to LEC capital input prices reduces its annual rate of growth by 3.27%,[9] implying an unadjusted input price growth of -1.5% per year (-4.77+3.27). It is this -1.5%, not his reported -4.77%, that forms the basis for a symmetrically defined comparison of U.S. and LEC input prices.

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7 Ibid., pp. 37-38.

8 Statement of John R. Norsworthy, Appendix A to AT&T filing, p. 22.

9 Ibid., p. 20.